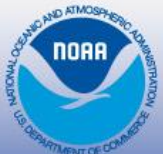# CORS Guidelines

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Goal

Upgrade the quality of CORS data and accuracy of associated meta data

Why Now?

- The network is mature more than 1 site every 150km
- Quality versus quantity. Users want improved accuracy
- L2C is here, Galileo on its way and L5 is coming

How

CORS network is 98% volunteer i.e. non-NGS

- Changes must be consistent with the needs of both NGS
   and the site operators
- Guidelines must accommodate a diverse group of site
   operators and data users

CORS Networks - **Same standards**
National - less dense, position checked daily, NGS
distributes and permanently archives data
Cooperative - high density, position checked daily, site
operator distributes and archives data for at least 30 days

Guidelines - Stability

Monument (structure that attaches the antenna to the ground)

Must maintain a constant 3-D position NOT affected by short term surface motion/monument motion (well coupled with the earth)

Environment

The space around the antenna should not change for the lifetime of the site (minimum 15 years). No vegetation growth, additional structures, etc.

Choose site location carefully

Guidelines - Equipment

Antennas

- L1 and L2
- Radomes NOT recommended
    WHY: distort signal and not required in design of antenna
- Oriented to true North
    WHY: apply antenna phase center values correctly
- Reference mark to antenna reference point (ARP) constant
    WHY: change antenna same coordinate

Receivers

- Cutoff angle 5° required, 0° preferred
    WHY: important for vertical positioning
- Collect hourly files, not daily

Problem lightning rod obstructs satellites

Problem wooden support
U-bolts height can change

04/20/2003

Problem tribrach "feet" cannot be locked height can be changed

Antennas on towers with guy wires poor stability

8 8:51AM

Good top
surface of pillar
narrower than
antenna
problem no
orienting &
leveling device

Good orienting &
leveling devices

Good rooftop
with orienting &
leveling device

Guidelines - Meta-data

Site Log - Written record of all equipment ever used and
   contact info for a site
 Must be machine readable (ASCII/text file)
 NGS will soon (< 1 month) have a web based log file
   creator

Photographs - Visual record of equipment and monument
   We require 10-12 pictures

Implementation

Site Selection Team - Assess all new CORS based on
current guidelines and requests changes if needed
3-4 people meet every 2 weeks
submit sites to ngs.proposed.cors@noaa.gov

Guidelines available at
www.ngs.noaa.gov/CORS/Establish_Operate_CORS.html

Meta-data - Revamping all meta-data via NGS Integrated
Database

CORS Quality Check

Individual site quality assessment is based on a comparison to the network as a whole, not an arbitrary standard

The worst performing sites will be encouraged to upgrade and may be dropped from the CORS network if a better site is available

Guidelines available at
www.ngs.noaa.gov/CORS/Establish_Operate_CORS.html